

## Hurricane and Severe Storm Sentinel (HS3) Mission

### HS3 2013.09.10-11 Flight Report: GLOBAL HAWK AV-1 mission to Gabrielle

Mission Scientists:

Shift 1 (1400-1600 UT): Anthony Didlake/Jim Doyle/Pete Colarco/Jon Moskaitis

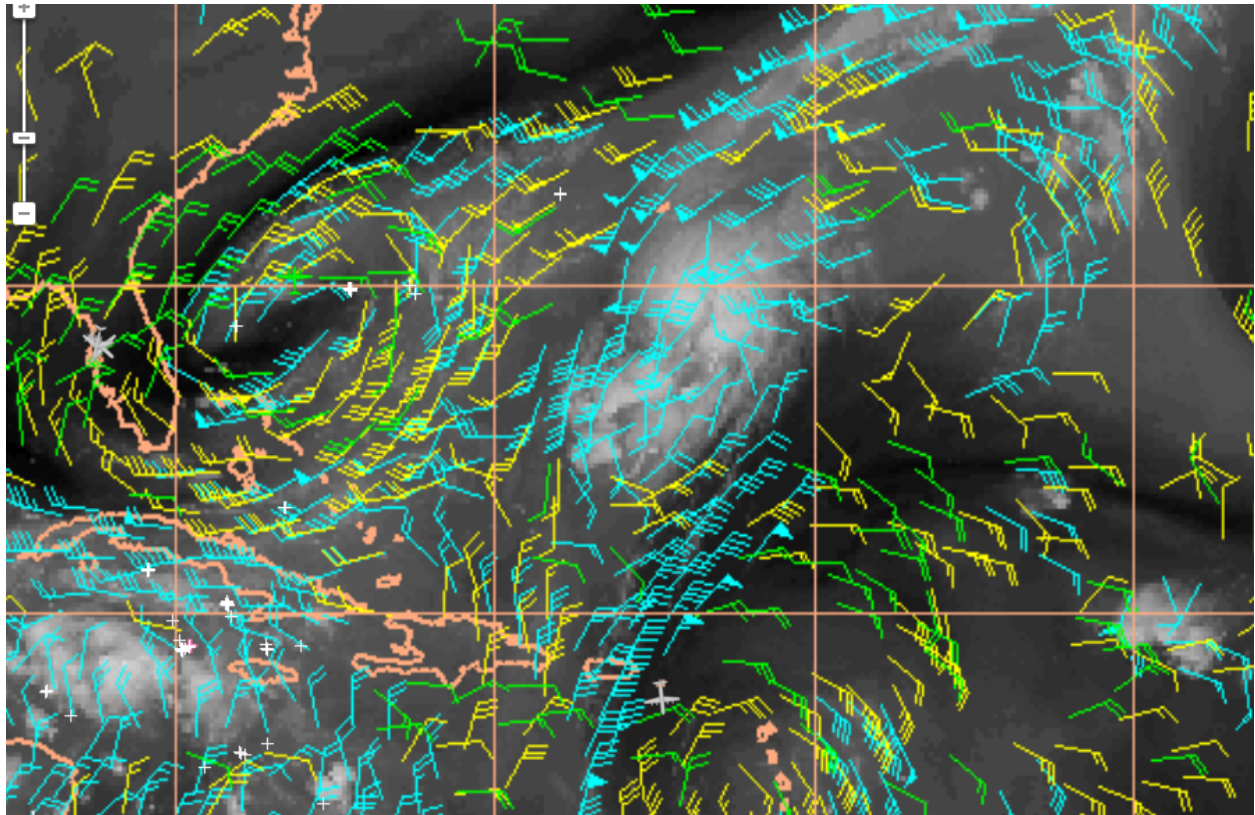
Shift 2 (1600-0100 UT): Deanna Hence/ Jason Sippel/Ed Zipser/Bob Houze

Shift 3 (0000-0900 UT): Steve Guimond/ Mike Montgomery/Paul Newman

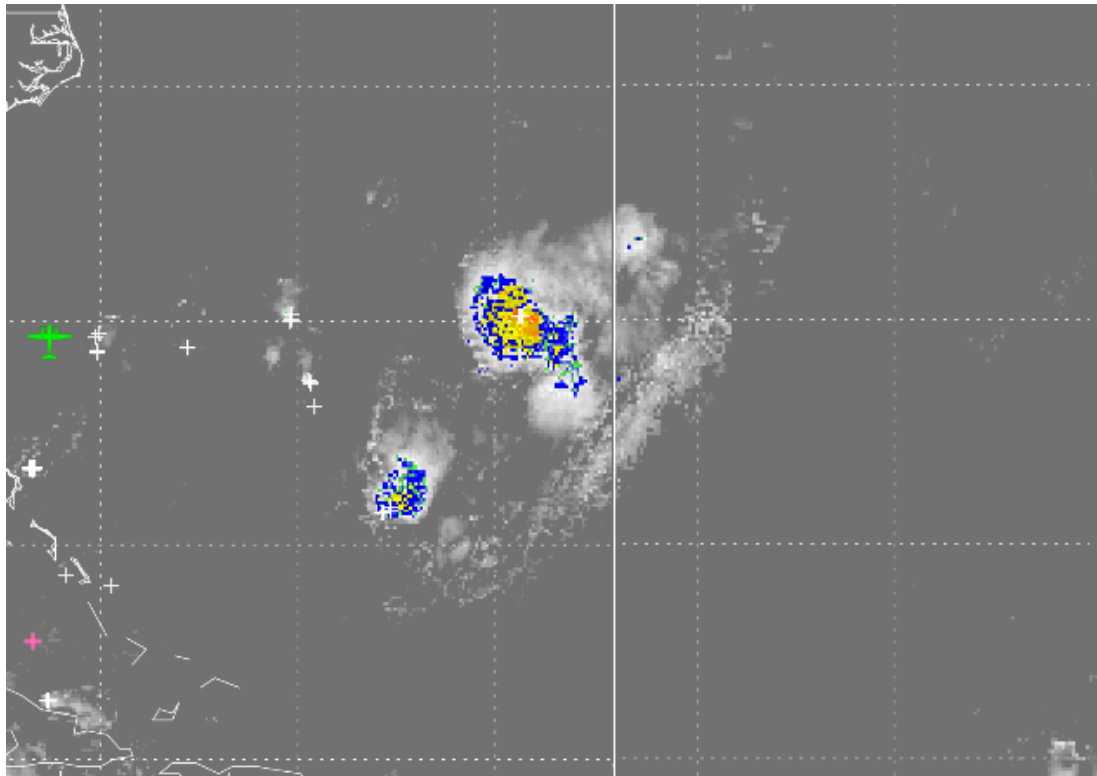
Shift 4 (0800-1200 UT): Anthony Didlake/Jim Doyle/Pete Colarco /Scott Braun

Mission goal: This mission is a follow on to an AV-1 flight over tropical storm Gabrielle. Gabrielle was declared a tropical storm for the second time on 10 September at 0600UTC. There is a tropical storm warning in effect for Bermuda as of 0500 ADT 10 September. The goal of this mission is to examine the convection and mesoscale organization associated with tropical storm Gabrielle.

An earlier attempt at an AV-1 flight on Tuesday for this disturbance had been cancelled due to software issues. This mission will be coordinated with the NOAA P3 (43).



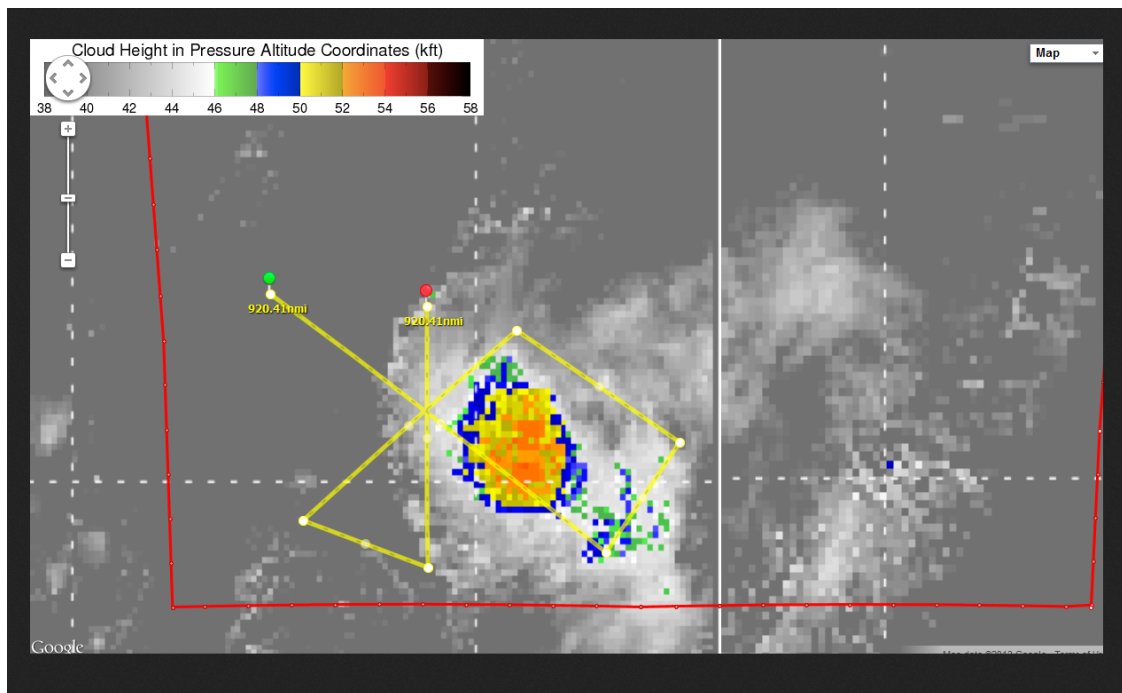
0900 UTC 10 September CIMSS shows TS Gabrielle in the favorable right entrance region of the upper level



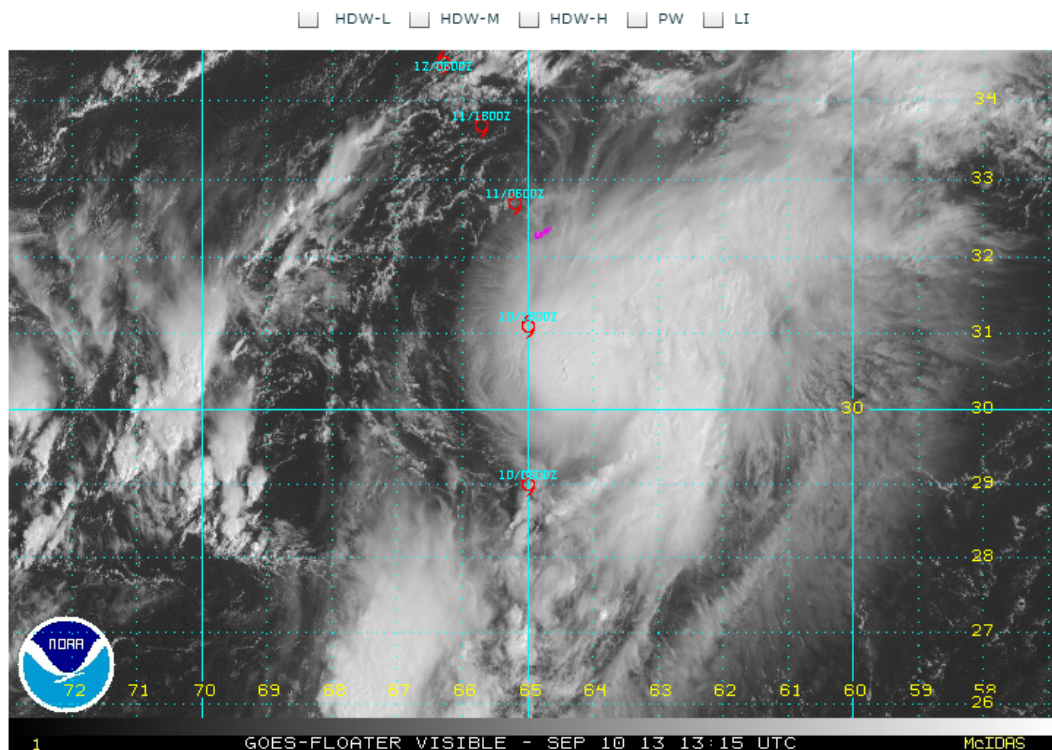
Cloud top heights and lightning at 1215 UTC 10 Sep, shows an active system.



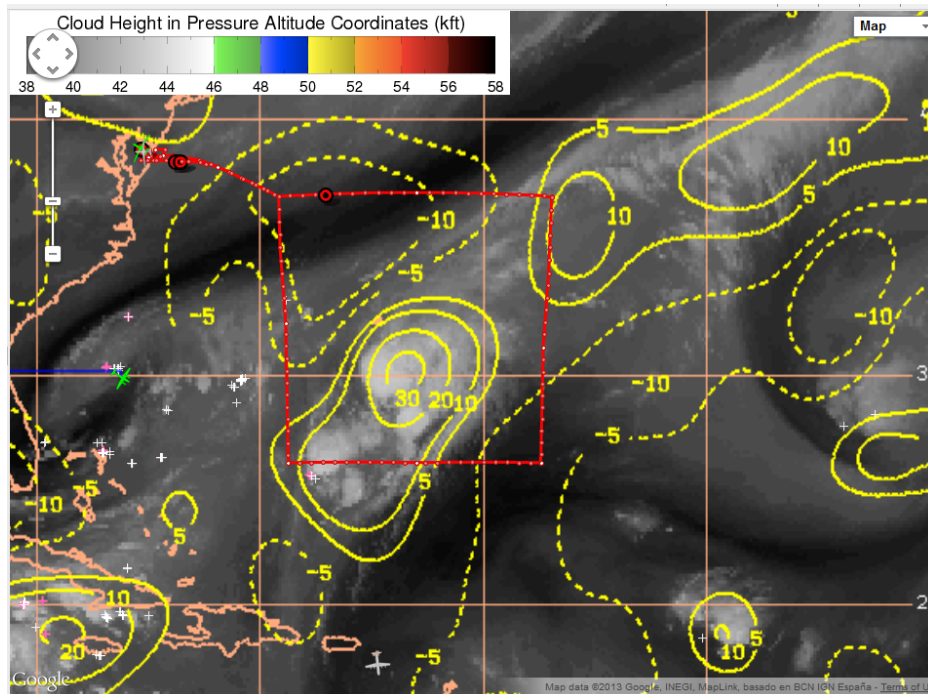
ASCAT winds valid at 20130910/0117 UTC.



Flight plan set for initial survey based on cloud tops height evolution from 1100-1345 UTC imagery, and expected speed of the system of 12 knots.

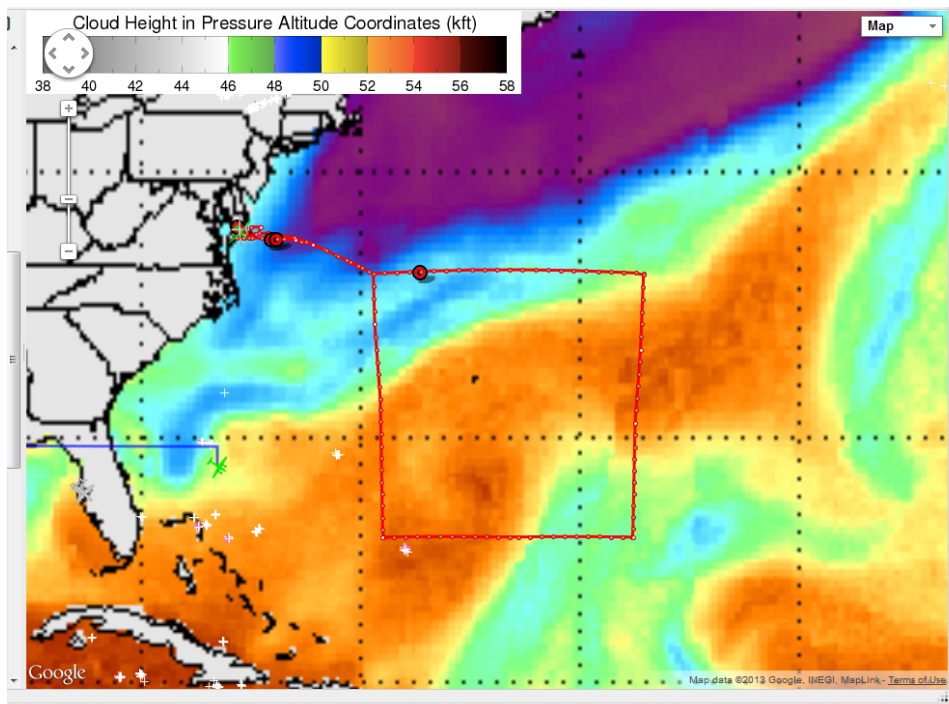


1315 UTC Gabrielle visible image shows overshooting tops downshear.



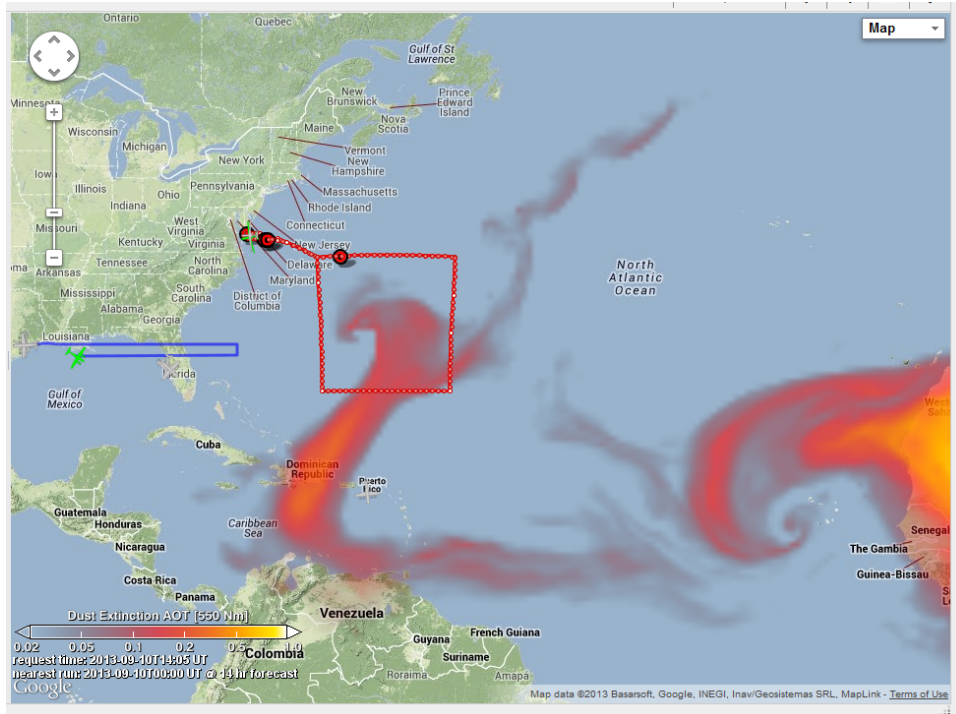
Upper-level horizontal divergence (CIMSS) valid at 1200Z shows a maximum near the largest convective region.

TAKEOFF at 1359 UTC 10 September

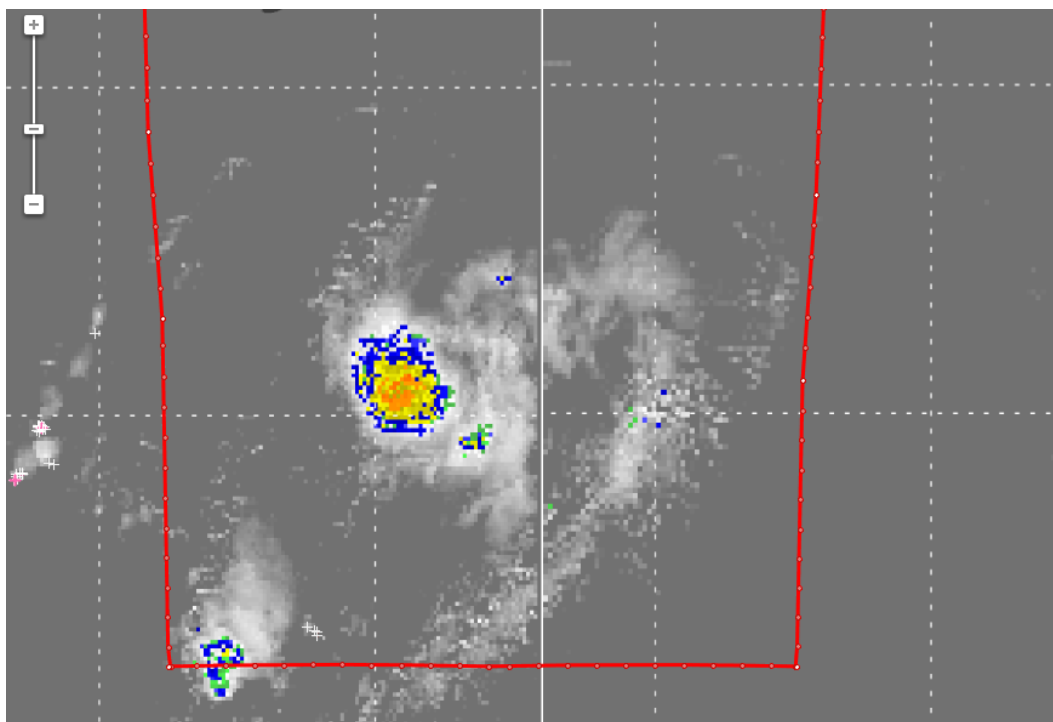


Dry air on the east side of Gabrielle is evident from the TPW at ~1200 UTC.



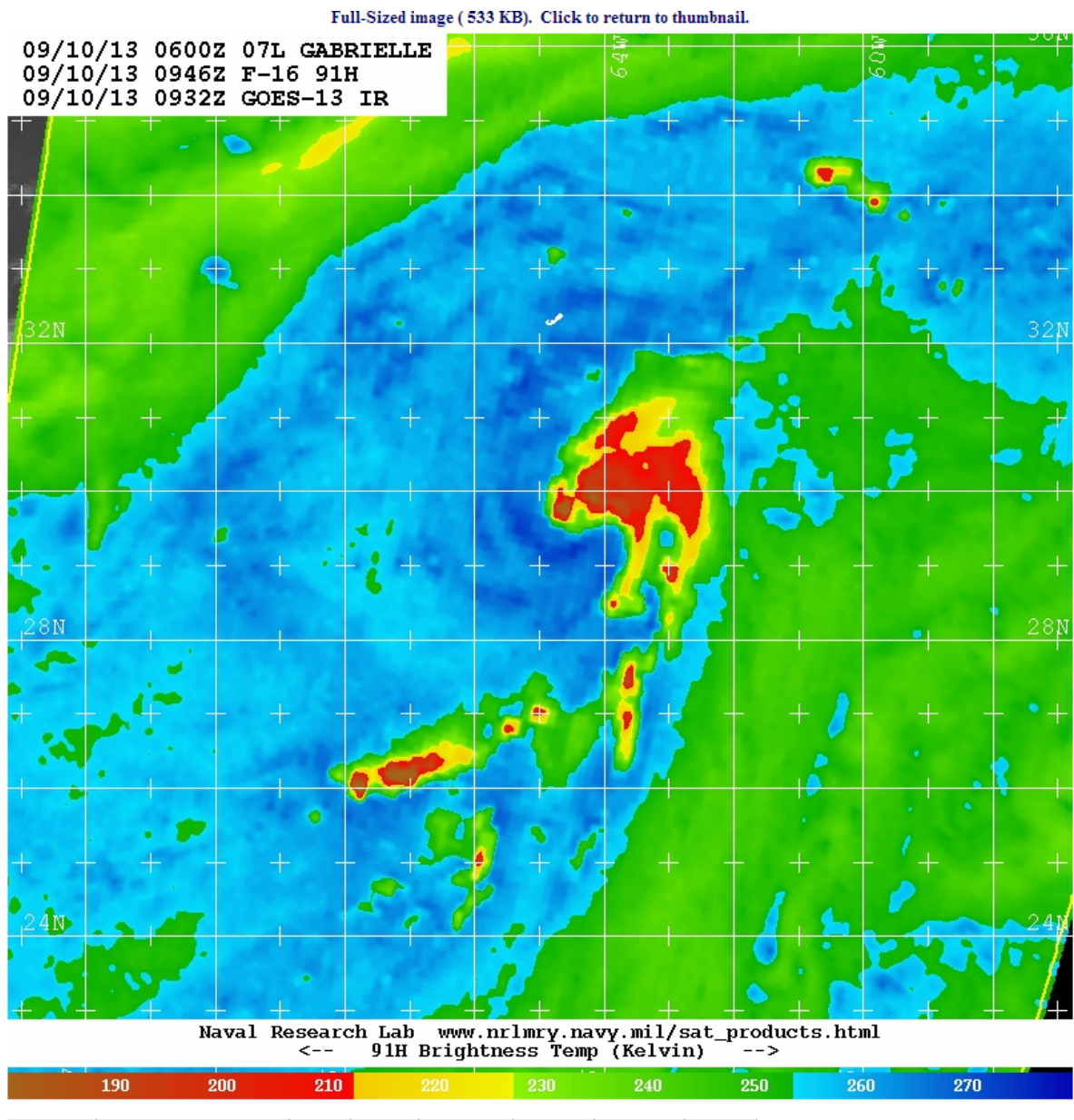


GOES-5 Dust Extinction valid at 1400 UTC 10 September. Shows suggestion of dust on the eastern side of Gabrielle along a filament from the south.

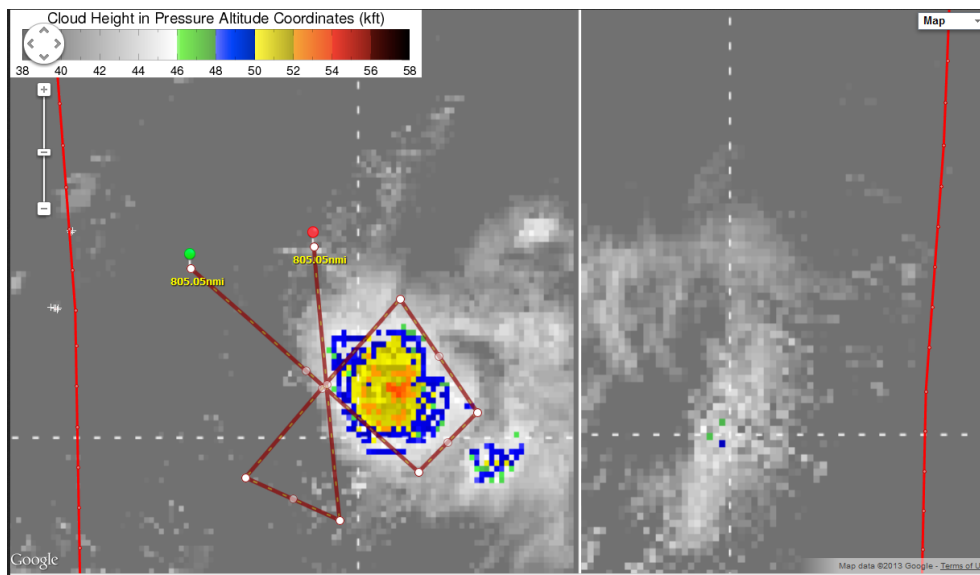


1402 UTC cloud top product. Cloud tops still in excess of 52kft. Comma shaped cloud pattern apparent.

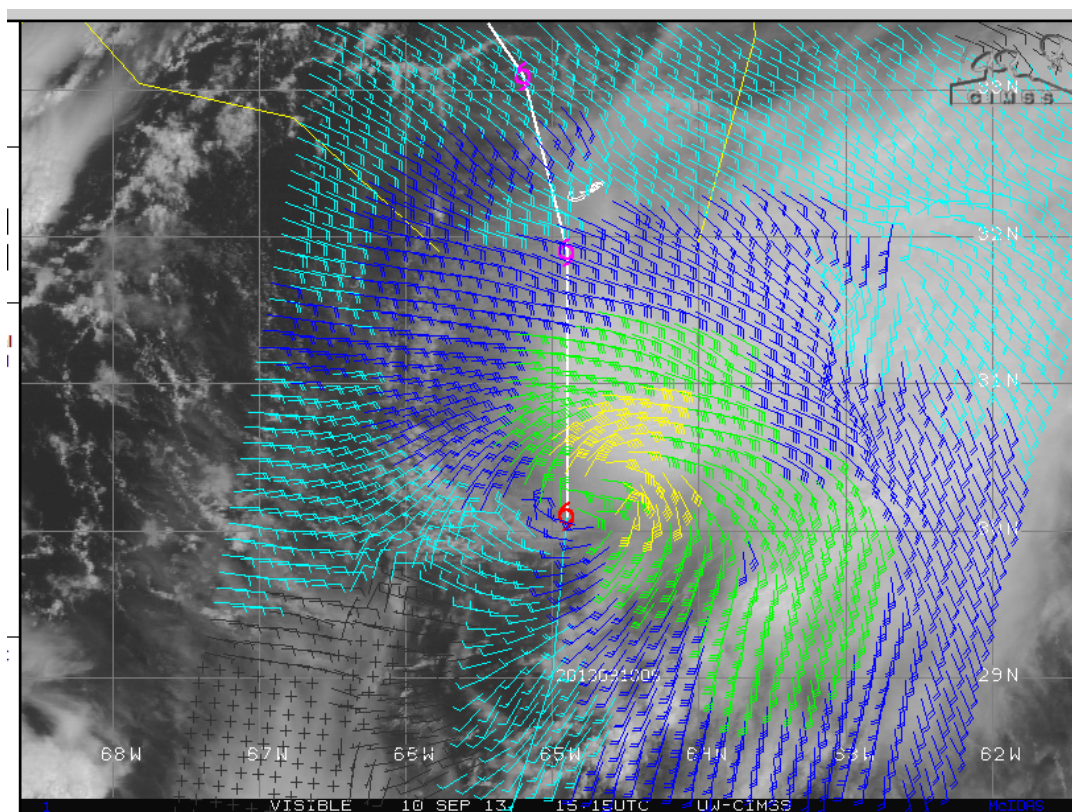
1438 UTC Return to base. One of the four navigation units has failed and requires to RTB. Will fly east and then return in about 1 hour.



NRL microwave imagery for Gabrielle shows the promising circulation that we missed.



Initial survey plan at 1518 UTC.



1345 UTC ASCAT pass.

About 35-40 minutes into the flight, one of four navigation units on AV-1 failed. Under this circumstance, the Flight Operations Manual instructs the Pilots to land as soon as practical. The decision was made to burn off fuel for about 3 hours in the restricted area before landing.

1833 Landing.